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(54) **CHROMATOGRAPHY APPARATUS HAVING
DIFFUSION-BONDED AND
SURFACE-MODIFIED COMPONENTS**

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See application file for complete search history.

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(57) **ABSTRACT**

A microfluidic device for separating a sample by chromatography includes diffusion bonded metallic sheets joined together to create a hermetically sealed interface between each adjacent metallic sheet without the introduction of a secondary material. Enclosed within the diffusion bonded sheets is a separation channel accessible by at least one of an inlet or an outlet. The separation channel is packed with micrometer-sized particles serving as a stationary phase in a chromatographic separation. Wetted surfaces of the separation channel include a coating of an organic material at least one monolayer thick.

16 Claims, 10 Drawing Sheets

